

## Salmonellosis Prevention

The best way to avoid *Salmonella* infections is to make sure that everything is thoroughly cooked. Here are additional ways to prevent salmonellosis:

- 1 Wash hands and surfaces often.** Always wash after touching meat or animals, going to the bathroom, or changing a diaper.
- 2 Wash hands, cutting boards, dishes and utensils with hot, soapy water before handling food and after handling raw meats.**
- 3 Separate raw meat, poultry and seafood from other foods in your refrigerator.**  
Their juices can contaminate your other foods with bacteria.
- 4 Rinse (and scrub, if possible) all fruits and vegetables.**
- 5 Wash and chill melons before slicing.**  
Choose melons that have damage-free rinds. Keep unused melon slices refrigerated.
- 6 Keep all meats and eggs 45°F or colder.**  
Defrost meat in the refrigerator or *cold* water.
- 7 Refrigerate leftovers promptly.** Reheat all leftovers to 165°F or hotter.
- 8 Do not eat raw vegetable sprouts (such as alfalfa or broccoli sprouts).**
- 9 Use pasteurized milk and egg products.**  
Do not eat raw milk or undercooked eggs.
- 10 Cook all meat products to the proper temperature.**  
165°F--Poultry and Casseroles  
155°F--Hamburger and Sausage  
150°F--Pork  
140°F--Fish, shellfish, lamb, intact beef (not ground beef), and hot dogs.

## Selected Unusual *Salmonella* Outbreaks

**Pasteurized milk.** In 1985, pasteurized milk was implicated in one of the largest U.S. outbreaks of salmonellosis. 16,000 confirmed cases of infection were linked to pasteurized milk that had accidentally been contaminated with raw milk in a Chicago dairy.

**Cereal.** The first U.S. *Salmonella* outbreak associated with a commercially-boxed cereal occurred in 1998. Over 200 cases were reported from at least 11 states. *Salmonella* was also found in samples from unopened boxes of the cereal; the cereal was voluntarily recalled.

**Cantaloupe.** Salmonellosis has been linked to melons since at least 1990 when cantaloupe caused 245 illnesses in 30 states. Grown on the ground, melons may be contaminated on their surface with dirt, animal waste, or bacteria, including *Salmonella*. Cutting an unwashed melon through a contaminated rind may contaminate the edible part. Excessive time (over 4 hours) at room temperature may then permit bacterial growth that can lead to illness. Many of these outbreaks implicated melons in salad bars and fruit salads--always make sure sliced melons have been kept cold before you eat them.

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### For more information:

#### Benton-Franklin Health District

800 W. Canal Dr.  
Kennewick, WA 99336 (509) 582-7761  
[www.bfhd.wa.gov](http://www.bfhd.wa.gov)

Check our other brochures:

*Egg Safety 101*

*Facts About Foodborne Illness*

*Turkey Safety*

*Pet/Reptile-Associated Salmonellosis*

#### Websites:

Food & Drug Administration Bad Bug Book  
[www.cfsan.fda.gov/~mow/intro.html](http://www.cfsan.fda.gov/~mow/intro.html)

Centers for Disease Control-*Salmonella* Information  
[www.cdc.gov/ncidod/diseases/submenus/sub\\_salmonella.htm](http://www.cdc.gov/ncidod/diseases/submenus/sub_salmonella.htm)

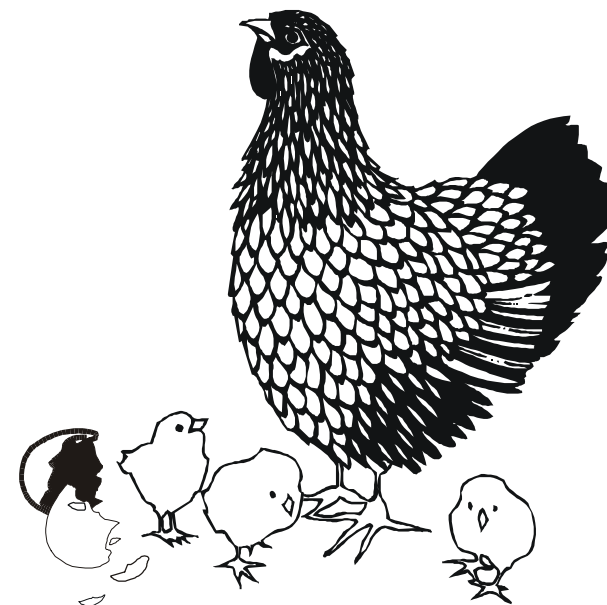
#### Phone numbers:

WSU Cooperative Extension  
(509) 735-3551  
USDA Meat and Poultry Hotline  
(800) 535-4555

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# Salmonella

food safety series



[www.bfhd.wa.gov](http://www.bfhd.wa.gov)



## Salmonella

*Salmonella* (a group of over 2400 bacteria that have similar characteristics) is commonly found in the intestinal tracts and waste of animals, birds and humans. The group is named for the veterinarian that discovered it in 1885, Daniel Salmon.

Salmonella bacteria are widespread in animals (especially poultry, reptiles and pigs) and the environment, including water, soil, insects, surfaces, feces and animal feed.

It is estimated that between 2-4 million Americans have *Salmonella* infections each year. Two of the most common *Salmonella* bacteria that cause illness in humans are Enteritidis and Typhimurium. *Salmonella* Enteritidis is usually associated with poultry and eggs, while *Salmonella* Typhimurium infections are usually caused by poultry, cattle, meats or meat products, and unpasteurized milk.

In addition to getting salmonellosis (*Salmonella* infection) from food, people may also become infected by handling pets (especially reptiles), animal feed or cleaning animal cages. Also see our pet-associated salmonellosis brochure.

### Who was Typhoid Mary?

Mary Mallon was an immigrant to the United States. In 1906, she was a cook and, unfortunately, a typhoid carrier. Typhoid fever (a severe illness that can cause nausea, vomiting, fever and death) is caused by *Salmonella* Typhi and is spread by the feces of infected people.

Mary Mallon unknowingly caused several typhoid outbreaks, leading to multiple illnesses and deaths. To help keep her from spreading the illness, she was quarantined for the majority of her life in a New York hospital. (Today, typhoid carriers are generally prohibited from working in food service in the U.S.)

Today, about 400 Americans get typhoid fever each year--about 70% of these cases are caused while traveling out of the U.S. Typhoid fever is more common in areas of the world where handwashing is less frequent and water is more likely to be contaminated with sewage.

## Symptoms

The symptoms and severity of salmonellosis will range depending on the strain of *Salmonella*, the health and age of the person infected, and the number of bacteria ingested. Many people that are infected will not show symptoms.





People that are most at risk for illness or severe symptoms are:

**Elderly**

**Infants**

**Chronically ill with other illnesses**

### Salmonellosis symptoms include:

-  Nausea, loss of appetite
-  Severe stomach pain
-  Headache, chills and fever (up to 105°F)
-  Severe, persistent diarrhea (sometimes bloody)

When present, symptoms usually begin 6-48 hours after infection and usually last from 2-7 days. People with symptoms should contact their doctor. A laboratory test is the only way to determine if the person has salmonellosis.

### Salmonella Typhimurium DT 104

Most cases of salmonellosis are self-limiting (go away on their own) and the rest are usually treatable with antibiotics. *Salmonella* Typhimurium DT 104, however, has recently been identified as resistant to many commonly-used antibiotics. (When properly diagnosed, it is still usually treatable with certain antibiotics.)

Antibiotic-resistance reinforces the importance of infection prevention through proper food safety, sanitation and animal husbandry practices.

Note: This brochure uses the new taxonomy (naming system) for *Salmonella*. Previously, the *Salmonella* serovars/strains were treated as though each was a species and named with the classic "Genus species" binary system, for example: *Salmonella typhimurium*. This is no longer valid under the new system. *S.typhimurium* should be listed as *Salmonella enterica* serovar Typhimurium or *Salmonella* Typhimurium (with the genus name capitalized and italicized, species name "enterica" is assumed/not listed, and the serovar name, Typhimurium, is capitalized but not italicized).

## Salmonella Enteritidis and Eggs

*Salmonella* bacteria usually live in the intestinal tracts of animals and are spread when the animal goes to the bathroom (in the animal's feces). In the 1970's, stringent procedures for inspecting, cleaning and disinfecting eggs reduced the cases of salmonellosis caused by external fecal contamination of eggshells.

Today, most salmonellosis cases associated with eggs are caused by *Salmonella* Enteritidis *inside* the egg. Even healthy-looking hens can be infected with the bacteria and can contaminate the eggs in her body *before* the shells are formed. To confuse the issue even more, infected hens can lay many normal eggs before occasionally laying a contaminated egg.

It has been estimated that 1 in 20,000 eggs is contaminated with *Salmonella*. (Contaminated eggs will look, smell and taste the same as regular eggs.) **To reduce your risk of infection:**

**Keep eggs refrigerated.** As the number of *Salmonella* in the egg increases, so does the chance of illness. Refrigeration keeps any *Salmonella* in the egg from increasing in number.

**Cook eggs until both the white and yolk are firm.** Cooking reduces the number of bacteria in the egg. Do not eat undercooked or raw eggs (including batters and doughs). Use pasteurized eggs or cooked-base recipes for traditionally-undercooked egg products like Hollandaise sauce, egg nog, and eggs served sunny-side up.

**Do not pool eggs.** Pooling (combining multiple eggs in one bowl) will cause one egg to contaminate the whole lot. Individually prepare eggs if possible.